



Local Operational Research Assistance (OPERA) Program

Brine Production Improvements

Liquid salt brine is a useful tool for deicing winter roads. But road salt can contain a lot of grit and fine particles, which often end up settling in large brine storage tanks used as part of the brine-making process. Though most plow trucks have small filters on their brine system, the filters are easily plugged by sediment that has made its way from brine supply storage tanks. As a result, frequent filter cleaning at least once or twice per shift is required to ensure effective brine application on the roads.

The Rochester Public Works Department received a \$10,000 grant through the Local OPERA Program to find a way to prevent contaminants in the salt intake hopper from reaching brine storage tanks and the trucks supplied by them. Public works staff installed high-flow industrial filters between the hopper and the tanks, and at each fill station. These were installed to filter all brine going through the brine pump.

Solar salt can increase the rate of brine production

Despite the use of a variety of filters in several configurations, the system continued to clog during the brine production process because ordinary road salt contains a lot of debris. Eventually, it occurred to the project team to switch its salt supply from road salt to solar salt, which has a higher level of purity but a higher cost as well. This simple-yet-effective change not only improved the quality of the brine but also expedited the production process.

With solar salt, sediment issues were significantly reduced, leading to clearer brine and smoother operations. In addition, the higher-quality solar salt dissolves so easily and with so little sediment that the system can produce 30% more brine each hour. Another low-cost modification to the system involved the installation of 2-inch “Y” strainers at truck fill stations, which serve as a final filter of contaminants before the brine goes into the trucks. This has been particularly helpful for capturing large particles produced by brine additives after the mixture sits unused for extended periods.

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OPERA Funding

\$10,000



Filters clogged during the brine production process because ordinary road salt contains a lot of grit and fine particles.



A Rochester Public Works staff member cleans sediment from a brine storage tank.

Using solar salt for making brine increases production speed, reduces clogs and sediment deposits, and produces higher-quality brine.

Higher-quality brine improves effectiveness of winter road maintenance

The experience of Rochester Public Works to improve its brine production process also may benefit other agencies, especially larger shops with brine makers seeking to enhance the effectiveness of winter road maintenance. The key recommendation of the project team is to use solar salt for making brine. Though it is more expensive (up to twice the cost of regular road salt) and requires a separate storage area, the extra costs are mitigated by an increase in production speed, fewer clogs and sediment deposits, and a higher quality of brine.

Rochester Public Works staff plan to continue their search for more effective filters and strainers to trap debris without restricting or reducing the flow of brine-maker output. They also hope to install an access panel near the bottom of each brine storage tank to facilitate cleaning sediment and sludge without the safety challenges of entering each tank from the top.

About OPERA

The Local OPERA Program encourages maintenance employees from all cities and counties to get involved in operational, “hands-on” research. OPERA helps to develop innovations in the construction and maintenance operations of local government transportation organizations and share those ideas statewide.

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